MITES ON GRASSHOPPER MICE AT THE NEVADA ATOMIC TEST SITE[1]

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This is the third of a series dealing with the mite fauna at the nuclear testing site near Mercury, Nevada (Allred and Beck, 1962; Allred, 1962). These studies are part of a broad ecological survey of which the objectives and a description of the biotic communities are given by Allred, Beck, and Jorgensen (1963).

Between August, 1959, and August, 1962, 84 grasshopper mice, *Onychomys torridus longicaudus* Merriam, were examined for ectoparasites. Mites were found on 51 mice. Approximately the same percentage of mice was infested in one community as in another. About equal numbers of male and female mice were infested, although males had an average of twice as many mites as females. The maximum number of mites found on a male mouse was 128 (*Euschöngastia criceticola*) in December and on a female, 65 (*Ischyropoda armatus*) in August. Relatively more mice were infested during June and October than in other months, although the average numbers of mites found on the mice were highest in August and December. The peak in December was due to heavy infestations of chiggers, and to mesostigmatids in August.

Haemolaelaps glasgowi (Ewing)

This cosmopolitan species is known from a variety of hosts including *Onychomys leucogaster* (Strandtmann and Wharton, 1958), but apparently has not heretofore been reported from *O. torridus*. At the test site it was found on 25% of the grasshopper mice, with male and female mice equally infested. It apparently is not an abundant symbiont of the mice, for in most instances only one mite per host was found. The greatest number found on a mouse was 10. Half of the times it was found, it was the only species on its host. Most of its mite associates were other mesostigmatids; it was found only once with chigger mites. Its seasonal records at the test site are: Jan., 1 dny, 2♂, 9♀; Mar., 1 dny, 1♀; April, 8♀; June, 6♀; Sept., 1♂, 5♀; Oct., 1 dny, 9♀; Nov., 3♀; Dec., 4♀.

Hirstionyssus triacanthus (Jameson)

Only two mice were found infested with mites of this species, each with only one female mite. These infestations in June likely were accidental inasmuch as this mite is typically associated with kangaroo rats (Strandtmann and Wharton, 1958).

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Hypoaspis leviculus (Eads)

Mites of this species have been reported from *Onychomys leucogaster* and rodents of several other species (Allred, 1958). Apparently its most commonly known host is the grasshopper mouse. At the test site this species was found on only 12% of the *O. torridus* examined. It was not as frequent in its occurrence on this host as were other mites. In most of its collections, less than four mites of this species were found on a host. The greatest number found on a mouse was five. Two of the 10 times it was collected it was the only mite species on its host. At other times it was associated only with mesostigmatid mites. Its seasonal records are: June, 8 ♀; July, 1 ♂; Sept., 8 ♀; Oct., 8 ♀.

Ischyropoda armatus Keegan

This species is known to occur in southwestern United States on a variety of rodents including *Onychomys leucogaster* (Allred, 1957). Twenty-three percent of the grasshopper mice examined at the test site were infested with it. Most infested animals possessed two or more mites, and as many as 65 were found on a single host. Eight of the 19 times it was collected it was the only mite species on its host. In one collection it was associated with chigger mites, and at other times with mesostigmatids. Seasonally it was collected as follows: Jan., 1 dny, 5 ♂; April, 1 ♀; May, 1 dny, 1 ♀; June, 3 dny, 9 ♂, 5 ♀; July, 2 ♀; Aug., 1 ♂, 69 ♀; Oct., 1 dny, 2 ♂, 4 ♀.

Kleemania sp.

Relatively little is known of the taxonomy and ecology of these mites. They were found on 15% of the mice examined. Most infested animals possessed three or less mites, but as many as 13 were found on a single host. Two of the 13 times it was collected it was the only mite species on its host. In one collection it was associated with chigger mites, and at other times with mesostigmatids. Its seasonal records are: April, 1 ♂, 12 ♀; June, 7 ♀; Sept., 1 ny, 14 ♀; Oct., 1 ♂, 16 ♀; Dec., 1 ♀.

Odontacarus linsdalei (Brennan and Jones)

This species has been reported from rodents of several species from California and Utah, but has not heretofore been known from grasshopper mice (Brennan and Beck, 1955). This species was the most frequent in occurrence of all the chigger mites collected from this host at the test site, although it was found on only 10% of the mice examined. In numbers of individuals it was not abundant on these mice. Usually less than 10 mites were found on a mouse, but in two instances 39 and 44, respectively, were found. Twice in the nine times that it was collected it was the only mite species on its host. At other times it was associated with another species of chigger mite, and only twice was it associated with mesostigmatid

mites. Its seasonal records are: June, 32 la; Aug., 87 la; Oct., 8 la; Dec., 1 la.

Euschöngastia criceticola Brennan

Four mice from the *Coleogyne ramosissima* plant community were infested with mites of this species. Whenever they were found, these mites were the predominant species. They were associated twice with *Odontacarus linsdalei*, once with a mesostigmatid protonymph, and once with *O. linsdalei*, *Haemolaelaps glasgowi*, and *Kleemania* sp. Their seasonal records are: Oct., 29 la; Mar., 28 la; Dec., 128 la.

Trombicula arenicola Loomis

A single larva of this species was collected in September, and 13 larvae in June.

Leeuwenhoekiinae sp. "B" Brennan

One mouse from a *Larrea divaricata* plant community and two from a Mixed community were infested with mites belonging to an undescribed genus and species. In the three collections these mites were predominant in numbers over their mite associates. This species was found associated three times with *Odontacarus linsdalei* and once with *Ischyropoda armatus*. Mites of this undescribed species were found attached side by side with *O. linsdalei*. A total of 160 larvae was collected in August.

Other Mites

Thirteen mites belonging to an unidentified species of the family Ameroseiidae were found on eight mice in Jan., April, July, Sept., and Oct. These were usually found in association with other mesostigmatids. Three protonymphs and three deutonymphs of an unidentified family were found on five mice in March and October.

Discussion

Little has been published on the mite fauna of *Onychomys torridus*, especially with reference to year-round examinations of the host species. Of the 12 species of mites found on this mouse at the Nevada Test Site, *Haemolaelaps glasgowi* and *Ischyropoda armatus* were most frequent in occurrence. Greatest numbers of individuals belonged to *I. armatus*, *Odontacarus linsdalei*, *Euschöngastia criceticola*, and an undescribed genus of chigger mite. Considering both frequency and population, *I. armatus* is considered the most common mite associate of *Onychomys torridus* at the test site. As far as is known, the host and distribution records reported here for Nevada are new.

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